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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Geoff W. Taylor et al.

SERIAL NO.: 10/700,016 GROUP ART UNIT: 2811

FILED: November 3, 2003 EXAMINER:

FOR: P-Type Quantum-Well-base Bipolar Transistor Device Employing Interdigitated Base and Emitter Formed with a Capping Layer

ATT'Y DOCKET: OPE-026

I hereby certify that this correspondence is being deposited on this day with the United States Postal Service as first class mail in an envelope addressed to : Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Jay P. Sbrollini Oct. 14, 2004
Jay P. Sbrollini Date
Reg. No. 36,266

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

SUBMITTAL OF DOCUMENTS PURSUANT TO DUTY OF DISCLOSURE

Pursuant to applicant's duty of disclosure 37 CFR Section 1.56, enclosed is a completed form PTOL-1449 as well as copies of the cited documents which relate to the above-referenced patent application. Since this document submittal is being presented prior to the first examination on the merits, no fee is due herewith.

The article entitled "10-Gb/s High-Speed Monolithically Integrated Photoreceiver Using InGaAs p-i-n PD Planar Doped InA1As/InGaAs HEMT's" describes a long wavelength monolithically integrated photoreceiver which is capable of operation at a 10-Gb/s NRZ light signal.

The paper entitled "10-Gbit/s InP-Based High-Performance Monolithic Photoreceivers Consisting of p-i-n Photodiodes and HEMT's" describes results that demonstrate the feasibility of using receiver OEIC's fabricated using a stacked layer structure of p-i-n photodiodes and HEMT's grown on INP substrates by single-step MOVPE.

The article entitled "10 Ghz Bandwidth Monolithic p-i-n Modulation-doped Filed Effect Transistor Photoreceiver" describes the fabrication of a photoreceiver circuit using an InGaAs p-i-n photodiode in GaAs/InA1As pseudomorphic modulation-doped field effect transistor (MODFET) based preamplifier.

The article entitled "20 Gbit/s Long Wavelength Monolithic Integrated Photoreceiver Grown on GaAs" describes the fabrication of the first 20 Gbit/s 1.3-1.55μm wavelength monolithic integrated photoreceiver grown on GaAs substrate using A1GaAs/Ga HEMTs.

The article entitled "Monolithic Integrated Optoelectronic Circuits" describes monolithic integration of lasers and photodetectors with electronic circuits promising higher bandwidth, improved manufacturability, smaller size, lower power and hence lower costs.

The article entitled "Heterojunction Field-Effect Transistor (HFET)" proposes a new form of FET for implementation in a heterojunction material system such as A1GaAs/GaAs.

The paper entitled "High Temperature Annealing of Modulation Doped GaAs/A1GaAs Heterostructures for FET Applications" describes high temperature annealing done on modulation doped GaAs/A1GaAs heterostructures by employing arsenic-overpressure capless annealing.

The article entitled "Submicrometre Gate Length Scaling of Inversion Channel Heterojunction Field Effect Transistor" describes the scaling to 0.5μm of the inversion channel HFET with a single strained InGaAs quantum.

The article entitled "Theoretical and Experimental Results for the Inversion Channel Heterostructure Field Effect Transistor" presents new theoretical and experimental findings for the inversion channel HFET to address the modelling needs of inversion channel opto-electronic integrated circuits (OEICs).

This article entitled "Transmitting Transistor Design" RF Transmitting Transistor and power amplifier fundamentals describes the design of the transistor system.

This article entitled "Thermally stable ohmic contacts to n-type GaAs. VIII. Sputter-deposited InAs Contacts"; by Hallili et al. discloses the electrical properties and structure of this system.

This article entitled "Thermally stable ohmic contacts to n-tyupe GaAs. IX. Sputter-deposited InAs Contacts Niln(mn) and Niln(w) Contact Metals"; discloses the electrical properties and structure.

This article entitled "Transferred Substrate HBT's with 254 Gh2F" by D. Mensa et al. Discloses the structure and fundamental design.

The listed documents are brought to the Examiner's attention because they are known to the applicant and/or the applicant's attorney and may be considered by the Examiner to be material to his/her examination. This listing should not be construed as representation that a search has been made or that no better art exists. No inference should be made that the documents are in fact material merely because they are referenced herein.

Moreover, no representation is made that the brief descriptions, if any, of the references necessarily describe the most material aspects of the references. Further, by this listing, the applicant is not making any admission regarding the relative dates of the invention and listed disclosures.

Respectfully submitted,

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INFORMATION DISCLOSURE CITATION PAGE 1 OF 3	Atty Docket No. OPE-026	Serial No. 10/700,016
	Applicant Geoff W. Taylor et al.	
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US PATENT DOCUMENTS

Examiner Initials		Document No.	Date	Name	Class	Sub-class	Filing date if approp.
	A	3,919,656	11/11/75	Sokal et al.	330	51	
	B	4,424,525	1/3/84	Mimura	357	23	
	C	4,658,403	4/14/87	Takiguchi et al.	372	96	
	D	4,683,484	7/28/87	Derkits, Jr.	357	16	
	E	4,806,997	2/21/89	Simmons et al.	357	16	
	F	4,814,774	3/21/89	Herczfeld	342	372	
	G	4,827,320	5/2/89	Morkoc et al.	357	22	
	H	4,829,272	5/9/89	Kameya	333	139	
	I	4,899,200	2/6/90	Shur et al.	357	30	
	J	4,949,350	8/14/90	Jewell et al.	372	45	
	K	5,010,374	4/23/91	Cooke et al.	357	16	
	L	5,105,248	4/14/92	Burke et al.	357	24	
	M	5,202,896	4/13/93	Taylor	372	50	
	N	5,337,328	8/9/94	Lang et al.	372	45	
	O	5,386,128	1/31/95	Fossum et al.	257	183.1	
	P	5,422,501	6/6/95	Bayraktaroglu	257	195	
	Q	5,436,759	7/25/95	Dijaili et al.	359	333	
	R	5,698,900	12/16/97	Bozada et al.	257	744	
	S	6,031,243	2/29/00	Taylor	257	13	
	T	6,043,519	3/28/00	Shealy et al.	257	195	
	U	US 20020067877	6/6/02	Braun et al.			
	V	5,288,659	02/94	Koch et al.	438	31	
	W	5,452, 118	09/95	Maruska	398	204	
	X	5,999,553	12/99	Sun	372	50	

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US PATENT DOCUMENTS

Examiner Initials		Document No.	Date	Name	Class	Sub-class	Filing date if approp.
	A	6,479,844	11/02	Taylor	257	98	
	B	6,720,584	04/04	Hata et al.	257	98	
	C	6,483,170	11/19/02	Johansson	257	580	
	D	6,239,475	05/29/01	Johansson et al.	257	488	
	E	6,037,616	03/12/00	Amamiya	257	198	
	F	5,003,366	03/26/91	Mishimi et al.	257	197	
	G						
	H						
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
	AA	10-Gb/s High-Speed Monolithically Integrated photoreceiver Using InGaAs p-i-n PD and Planar Doped InAlAs/InGaAs HEMT's by Akahori et al, IEEE Photonics Technology Letters, Vol 4, No. 7, July 1992
	BB	10-Gbit/s InP-Based High-Performance Monolithic Photoreceivers Consisting of p-i-n Photodiodes and HEMT's by Takahata et al., IEICE Trans. Electron., Vol. E83-C, No. 6 June 2000
	CC	10 Ghz Bandwidth Monolithic p-i-n Modulation-doped Field Effect Transistor Photoreceiver by Dutta et al., Appl. Phys. Lett., Vol. 63, No. 15, 11 October 1993
	DD	20 Gbit/s Long Wavelength Monolithic Integrated Photoreceiver Grown on GaAs by Hurm, et al., Electronics Letters, Vol. 33, No. 7, 27th March 1997
	EE	Monolithic Integrated Optoelectronic Circuits by Berroth et al., Fraunhofer Institute for Applied Solid State Physics (IAF), Germany, IEEE 1995
	FF	Heterojunction Field-Effect Transistor (HFET), Reprinted from Electronics Letters, Vol 22, No. 15, pp. 784-786, 17th July 1986
	GG	High Temperature Annealing of Modulation Doped GaAs/A1GaAs Heterostructures for FET Applications by Lee et al., 1983 IEEE/Cornell Conf. On High-Speed Semiconductor Devices & Ckts, 8/83
	HH	Submicrometre Gate Length Scaling of Inversion Channel Heterojunction Field Effect Transistor by Kiely et al., Electronics Letters, Vol. 30, No. 6 17th March 1994
	II	Theoretical and Experimental Results for the Inversion Channel Heterostructure Field Effect Transistor by Taylor et al., IEE Proceedings-G, Vol. 140, No. 6, December 1993
	j j	Transmitting Transistor Design; RF Transmitting Transistor and power amplifier fundamentals, Phillips Semiconductors; March 23, 1998
	kk	Thermally Stable Ohmic Contacts to n-type GaAs. VIII. Sputter-deposited InAs Contacts; HJ Kim, Masanori Murakami, SL Wright, M. Norcott, WH Price and D. La Tulipe; 4/11/90
	ll	Thermally Stable Ohmic Contact to n-type GaAs IX. Sputter-deposted InAS Contacts Niln(mn) and Niln(w) Contact Metals, J. Applied Physics, Vol. 70, 11/12/91 pgs. 7443-7448
	mm	Transferred Substrate HBT's with 254 GH2F. D. Mensa et al.; Electron Lett. 4/99; 35(7) pp. 605-606

EXAMINER	DATE CONSIDERED